

AMENDMENTS TO THE CLAIMS

1. **(Currently Amended)** A process for producing at least two different propylene polymer grades, which comprises polymerizing propylene, optionally with comonomers, under polymerization conditions in the presence of hydrogen as a molecular weight controlling agent and a Ziegler-Natta catalyst system, said catalyst system comprising a catalyst component, and an external donor selected from a first and a second external donor, wherein the first external donor is used for producing a first polymer grade and is changed to the second external donor for producing a second polymer grade, but the hydrogen feed is changed at the most 5% from the volume used for producing the first polymer grade, a first and second external donor, respectively, wherein the first external donor is changed to the second, but the hydrogen feed is maintained within at most 5% by volume at a predetermined level, during [[a]] the transition of production from the first polymer grade to the second; and wherein the catalyst system comprises solid catalyst particles which exhibit active sites evenly distributed throughout the particles; wherein the catalyst particles are not supported on an external carrier; wherein the isotacticity of the first second polymer grade is changed while keeping the melt flow rate of the first polymer grade at a predetermined level during a transition of production from the first polymer grade to the second different than that of the first polymer grade while keeping the melt flow rate of the first and second polymer at the same, predetermined level of 0.01 to 1500 g/10 min during a transition of production from the first polymer grade to the second; and wherein said process is carried out in a polymerization arrangement comprising at least one polymerization reactor.

2. **(Currently Amended)** The process according to claim 1, wherein the external donors are ~~strongly~~ strong coordinating donors.

3. (Previously Presented) The process according to claim 1, wherein the external donors are selected from the group of silane base donors having the general formula



wherein R''' is a branched aliphatic or cyclic or aromatic group, Me is methyl and n is 1 or 2.

4. (Previously Presented) The process according to claim 1, wherein the external donors are selected from the group consisting of dicyclopentyl dimethoxysilane (donor D), cyclohexylmethyl dimethoxy silane (donor C), diisopropyl dimethoxysilane, methylcyclohexyldimethoxy silane, di-isobutyl dimethoxysilane, and di-t-butyl dimethoxysilane.

5. - 6. (Cancelled)

7. **(Currently Amended)** The process according to claim 1, wherein the catalyst component of the catalytic system comprises a compound of a transition metal of Group 3 to 10 of the Periodic Table, or of an actinide or lanthanide, and is obtained by forming a liquid-liquid emulsion system, which contains a homogeneous solution of at least one catalyst component, said solution being dispersed in a liquid medium, and forming the dispersed phase of the liquid-

liquid emulsion system, solidifying said dispersed droplets to form solid catalyst particles having a predetermined size range of 5 to 200 μm , and removing the solvent from the reaction mixture in order to obtain said solid catalyst particles.

8. (Previously Presented) The process according to claim 1, wherein the Ziegler-Natta catalyst system includes as a cocatalyst an alkyl aluminum compound.

9. (Cancelled)

10. (Currently Amended) The process according to claim 1, comprising:

- a first polymer having a predetermined MFR and a first degree of isotacticity in the presence of said catalytic system using a first external donor; and
- a second polymer having essentially the same predetermined MFR and a second degree of isotacticity in the presence of said catalytic system using a second external donor;
- wherein the hydrogen feed is maintained at an essentially constant level during the polymerization.

11. (Original) The process according to claim 10, wherein the catalyst component of the catalytic system comprises a compound of a transition metal of Group 3 to 10 of the Periodic Table, or of an actinide or lanthanide, and is obtained by forming a liquid-liquid emulsion system, which contains a homogeneous solution of at least one catalyst component, said solution being dispersed in a liquid medium, and forming the dispersed phase of the liquid-liquid

emulsion system, solidifying said dispersed droplets to form solid catalyst particles having a predetermined size range, and removing the solvent from the reaction mixture in order to obtain said solid catalyst particles.

12. (Cancelled)

13. (Cancelled)

14. (Currently Amended) The process according to claim 10, wherein the catalytic system comprises a catalyst component containing as essential components magnesium, titanium and halogen, [[and]] a cocatalyst compound, and an external donor.

15. (Cancelled)

16. (Previously Presented) The process according to claim 10, wherein the catalyst component is used in the form of particles having an average size range of 10 to 100 μm .

17. - 18. (Cancelled)

19. (Previously Presented) The process according to claim 10, wherein the catalyst component is

prepared according to a liquid-liquid two phase emulsion method comprising:

- preparing a solution of a complex of a Group 2 metal and an electron donor or a precursor thereof in an organic liquid reaction medium,
- reacting said complex, in solution, with at least one compound of a transition metal to produce an emulsion, the dispersed phase of which contains more than 50 mol-% of the Group 2 metal in said complex,
- maintaining the droplets of said dispersed phase within the average size range 5 to 200 μm by agitation in the presence of an emulsion stabilizer and solidifying said droplets, and
- recovering, washing and drying said particles to obtain said catalyst component.

20. (Previously Presented) The process according to claim 10, wherein the transition metal is a compound of a Group 4 metal.

21. (Previously Presented) The process according to claim 10, wherein the Group 2 metal is magnesium.

22. (Previously Presented) The process according to claim 10, wherein said organic liquid reaction medium comprises a $\text{C}_6\text{-C}_{10}$ aromatic hydrocarbon or a mixture of $\text{C}_6\text{-C}_{10}$ aromatic hydrocarbon and $\text{C}_5\text{-C}_9$ aliphatic hydrocarbons.

23. (Previously Presented) The process according to claim 10, wherein said emulsion is composed of

- a dispersed phase which is TiCl_4 /toluene-insoluble oil, having Group 4 metal/Mg mol ratio 0.1 to 10 and of
- a disperse phase which is an oil less dense than the dispersed phase, having Group 4 metal/Mg mol ratio 10 to 100.

24. **(Currently Amended)** The process according to ~~any of the preceding claims~~ claim 10, wherein the propylene polymers are homopolymers, random copolymers, block copolymers or combinations thereof.

25. (Cancelled)

26. **(Currently Amended)** The process according to claim 10, wherein the hydrogen feed is ~~maintained within at most 2 % by volume of a predetermined level during the preparation of the first and the second polymers~~ changed at the most 2% from the volume used for producing the first polymer grade during the transition of the production from the first polymer grade to the second polymer grade.

27. (Previously Presented) The process according to claim 10, wherein the polymerization reactor arrangement comprises at least one reactor selected from liquid (slurry) reactors and gas or vapour phase reactors.

28. (Original) The process according to claim 27, wherein the polymerization reactor arrangement comprises a cascade of at least two reactors selected from liquid (slurry) reactors and gas or vapour phase reactor.

29. (Previously Presented) The process according to claim 27, wherein the slurry reactor is a loop reactor.

30. (Previously Presented) The process according to claim 10, comprising producing a propylene polymer having a Melt Flow Rate (MFR₂) of 0.01 to 1500 g/10 min.

31. (Original) The process according to claim 30, comprising producing a propylene polymer having a Melt Flow Rate (MFR₂) of 10 to 300 g/min.

32. (Currently Amended) The process according to claim 30, wherein the isotacticity of the propylene polymer is above [[98]] 95.

33. (Currently Amended) A process for controlling isotacticity of polypropylene polymers by using external donors, comprising

- feeding propylene together with optional comonomers along with hydrogen as a molecular weight controlling agent and a Ziegler-Natta catalyst system, including a catalyst component having as essential components Ti, Mg and Cl, a cocatalyst, and first and second external donors an external donor selected from a first and second external

donor, into a polymerization reactor arrangement formed by at least one polymerization reactor and

- polymerizing propylene together with the optional monomers under polymerization conditions in order to obtain a polymer product having a predetermined melt flow rate and isotacticity,

wherein isotacticity is adjusted by changing the external donor from the first external donor to the second without changing the hydrogen feed and still maintaining the melt flow rate essentially at the same level.

34. (Original) The process according to claim 33, wherein the catalyst system comprises solid particles, which exhibit active sites evenly distributed throughout the particles.

35. (Original) The process according to claim 34, wherein the catalyst particles contain no external carrier.

36. (Cancelled)

37. (Currently Amended) The process according to ~~claim 36~~ claim 33, wherein the catalyst component is used in the form of particles having an average size range of 10 to 100 μm .

38. (Previously Presented) The process according to claim 37, comprising producing a propylene polymer having a Melt Flow Rate (MFR₂) of 10 to 300 g/min.

39. (Previously Presented) The process according to claim 38, wherein the isotacticity of the propylene polymer is above 98.